

Executive Summary

ES.1 Proposed Action

The Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT) are proposing an upgrade of the existing US 31 corridor to a multi-lane, divided freeway between I-465 and SR 38. The DEIS has identified Alternatives F1 through F6 as the preferred alternatives.

ES.2 Project Description

The US 31 Improvement Project is located in Hamilton County, Indiana between I-465 (north leg) and State Road (SR) 38, a distance of approximately 12.5 miles. It traverses the City of Carmel, Clay Township, the Town of Westfield, and Washington Township. Interstate 465 was designated as the southern project terminus because it represents a major origin and destination point for US 31. SR 38 was designated as the northern project terminus because it represented the next significant east-west arterial that intersected with US 31 north of Westfield. In addition, traffic patterns and volumes on US 31 along with land use and roadway characteristics change significantly beyond these termini. As such, this segment of US 31 has “independent utility”. Due to the potential for construction and easement impacts, the area of study extended beyond the termini south, approximately one-quarter mile, to 96th Street and north, approximately one-half mile, to 216th Street.

ES.3 Significant Actions in Project Vicinity

Transportation improvement projects in the US 31 proposed project area that could potentially influence travel in the project vicinity include:

- Northbound connector from SR 431(Keystone Avenue) to 146th Street
- Widening SR 431 from four lanes to six lanes from 96th Street to US 31
- Northeast Corridor (NEC) “Connections” project
 - Adding travel lanes to I-465 north leg from US 31 east to I-70
 - Adding travel lanes to I-69 from I-465 north to SR 238
- Adding travel lanes to I-465 (north leg) from US 421 to US 31
- Construction of a new four-lane local roadway, Illinois Street, from 103rd Street to 136th Street
- Widening 116th Street from two lanes to four lanes from Rangeline Road east to Gray Road
- Widening 126th Street from two lanes to four lanes from Pennsylvania Street east to Adams Street
- Widening Old Meridian Street from two lanes to four lanes from Pennsylvania Street east to Guilford Boulevard
- Widening from two lanes to five lanes of SR 32 from 1.6 miles west of US 31 (Spring Mill Road) to US 31
- A placeholder for increased capacity along SR 32 from US 31 to 2.6 miles east of US 31 (Moontown Road)

The aforementioned NEC Project focuses on major highway and transit improvements that would have the most benefit to the Indianapolis regional transportation system. The NEC study area as identified by the Indianapolis MPO includes the main travel corridors between downtown Indianapolis and Carmel, Fishers and Noblesville. This study area also includes the residential and commercial areas of northeastern and central Marion County. The entire project area is approximately 23 miles in length and extends from the I-70/I-465 split on the northeast side of Indianapolis to an area north of SR 32 near Noblesville. The western portion of the project area extends west of US 31 (Meridian Street) to an area north of 146th Street between Carmel and Westfield. Although the project does not propose the upgrade or alteration of the existing US 31 corridor through the City of Carmel, it is geared towards improving the flow of traffic in northeastern Marion and eastern Hamilton Counties. Fourteen alternatives were analyzed in terms of general costs and impacts. Among the alternatives analyzed were a series of express bus routes. Among the analyzed express routes was the ‘Carmel Express’ that would run from Village Park Plaza near the intersection of US 31 and SR 431 and continue to Downtown Indianapolis via Rangeline Road, 116th Street, SR431/Keystone Avenue, Fall Creek Parkway and Capitol/Illinois Streets.

INDOT prepared an Environmental Assessment (EA) in November 2001 for SR 431 from 96th Street to approximately 1,000 feet north of 136th Street. The SR 431 Improvement Project consists of widening SR 431 from four lanes to six lanes within the existing median. In addition to this project, Hamilton County is constructing a northbound connector from SR 431 to 146th Street. The proposed US 31 Improvement Project involves three potential interchange options at 146th Street that would tie into SR 431. The FHWA issued a Finding of No Significant Impacts (FONSI) for the SR 431 EA on May 28, 2002.

ES.4 Purpose and Need

A Purpose and Need Statement for the US 31 project was drafted in May 2001, and presented at a Public Meeting and an Interagency Review Meeting in June 2001. The Purpose and Need Statement was revised following the collection and analysis of updated traffic and crash (accident) data along with comments received.

Project Need Statement

Transportation improvements to US 31 between I-465 and SR 38 are needed for the following reasons:

Traffic Congestion and Capacity Needs

- For the base year 2000, seven out of 15 (47 percent) intersections operate at LOS E or F during the AM and/or PM peak hours (LOS D is minimally acceptable based on INDOT’s current standards).
- By the year 2025, 13 out of 15 (87 percent) intersections are projected to operate at LOS E or F during the AM and/or PM peak hours.

Note: Level of Service (LOS) describes a measure of congestion on roadways. LOS ranges from A to F, with LOS A indicating the least traffic congestion and LOS F indicating the most traffic congestion. INDOT standards state that for a multi-lane urban arterial, LOS C or better is desirable while the minimum LOS is D.

Safety

- Six of the ten roadway segments on US 31 have crash rates greater than the statewide average for similar facilities.
- Seven of the ten roadway segments on US 31 have injury crash rates greater than the statewide average for similar facilities.

Project Purpose Statement

Based on the transportation needs listed, the purpose of the US 31 Improvement Project is to:

- Reduce congestion for the US 31 corridor by improving to LOS D or better;
- Improve the level of safety for motorists using the US 31 corridor; and
- Provide for the reliable and efficient movement of commerce and regional travel.

Evaluation Criteria for Meeting Purpose and Need

The criteria established to evaluate each project alternative's ability to meet the purpose and need of the project include the following:

- Improve congestion to LOS D or better;
- Reduce crash rates; and
- Provide a facility with characteristics consistent with the criteria in INDOT's 2000-2025 Long Range Transportation Plan for Statewide Mobility Corridors*.

ES.5 Alternatives

Preliminary Alternatives Analysis and Screening

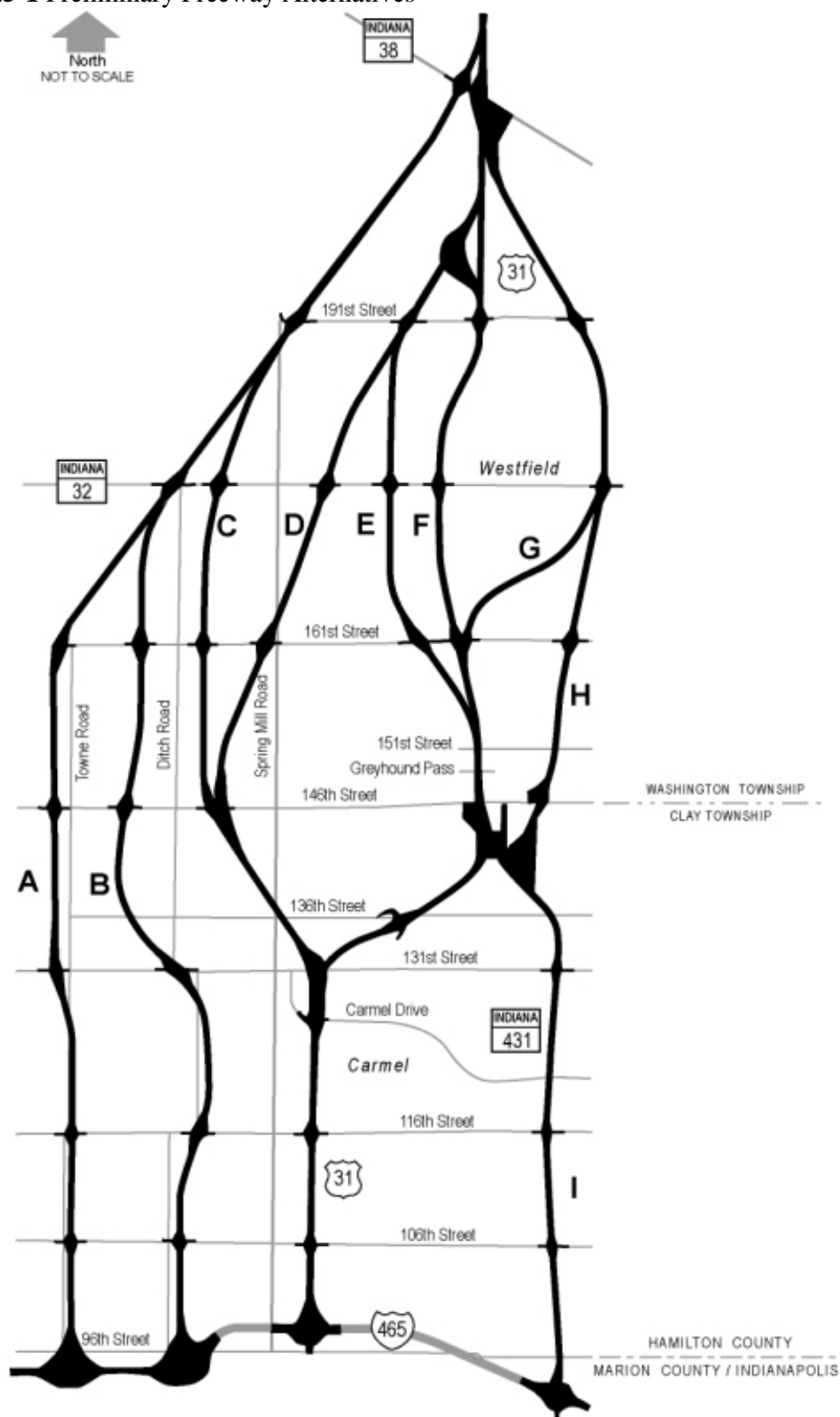
The development of alternatives for the US 31 Improvement Project began with a broad examination of potential solutions to the transportation needs of the region. The current transportation system, existing and projected traffic conditions, safety, and the overall mobility needs of the State and metropolitan area were evaluated in determining the purpose and need for the project. The State's designation of US 31 as a Statewide Mobility Corridor assists in defining the role and priority of the corridor within the region and State.

A wide range of potential solutions for addressing the project's needs was then developed. Potential alternatives considered included: a No-Action alternative, Travel Demand Management (TDM) alternatives, Transportation System Management (TSM) alternatives, mass transit alternatives, one expressway alternative (widening US 31 to three lanes in each direction with partial access control), and nine freeway alternatives (Figure ES.5-1). The nine freeway alternatives range from improving US 31 and SR 431 to urban freeway standards on existing alignment to providing a new freeway facility on a completely new alignment.

These alternatives were evaluated to determine if they should be carried forward for evaluation in the Draft Environmental Impact Statement (DEIS). A two-phase process was used to screen each alternative. The first phase of this process analyzed the alternatives with respect to the purpose and need. If the alternative satisfied the project's purpose and need, it was advanced to the second phase, which analyzed the environmental impacts of the alternative.

* Consistency with criteria for Statewide Mobility Corridors was not a requirement to satisfy the project's purpose and need.

Figure ES.5-1 Preliminary Freeway Alternatives



Phase 1: Purpose and Need

The first phase of this process analyzed the preliminary alternatives with respect to the purpose and need. To meet the purpose and need for this project, an alternative would have to improve levels of service along existing US 31 to LOS D at a minimum, reduce crash rates, and be consistent with the criteria for INDOT's Statewide Mobility Corridors. If it were determined that an alternative would clearly not satisfy the purpose and need then it was not advanced to the next phase. Alternatives that would meet the purpose and need were advanced to more detailed environmental study.

During the first phase, the No-Action, TSM, TDM, Mass Transit, and Widen US 31 alternatives were eliminated due to not meeting the purpose and need of the project (Table ES.5-1). Freeway alternatives A, B, C, D and I were also eliminated because they did not meet the project's purpose and need. Alternatives E, F, G and H were carried forward for further analysis in the second phase.

**Table ES.5-1
Phase 1: Purpose and Need Evaluation**

Alternative	Phase 1 – Purpose and Need Criteria			Advanced to Phase 2
	Reduces Congestion on Existing US 31 (LOS D or better)	Improves Safety	Characteristics Consistent with Criteria for INDOT's Statewide Mobility Corridors *	
No-Action	No	No	No	No
TDM	No	No	No	No
TSM	No	No	No	No
Mass Transit	No	No	No	No
Freeway				
Alternative A	No	Yes	Yes	No
Alternative B	No	Yes	Yes	No
Alternative C	No	Yes	Yes	No
Alternative D	No	Yes	Yes	No
Alternative E	Yes	Yes	Yes	Yes
Alternative F	Yes	Yes	Yes	Yes
Alternative G	Yes	Yes	Yes	Yes
Alternative H	Yes	Yes	Yes	Yes
Alternative I	No	Yes	Yes	No
Expressway				
Widen Existing US 31	No	No	No	No

* Alternatives were not required to be consistent with criteria for Statewide Mobility Corridors to be advanced to Phase 2.

Phase 2: Environmental Impacts

The second phase of the process analyzed the environmental impacts of the preliminary alternatives advanced from Phase 1 (Table ES.5-2). An environmental database was created using readily available data for the US 31 corridor. Geographic Information System (GIS) technology was used to display information, identify potential impacts and facilitate the screening process. The relative order of magnitude of impacts associated with alternatives advanced to this phase was assessed using this GIS tool.

Category		Units	Alternatives			
			E	F	G	H
Landuse:						
	Agricultural	acres	262	101	254	327
	Commercial	acres	82	104	79	68
	Forestland	acres	77	58	85	72
	Herbaceous rangeland	acres	0	0	0	0
	Shrub/brush rangeland	acres	1	1	7	1
	Industrial	acres	0	3	0	0
	Institutional	acres	11	9	9	8
	Open land	acres	1	1	1	1
	Residential	acres	37	31	27	39
	Under Construction	acres	0	0	0	0
	Totals	acres	471	308	462	516
Relocations:						
	Churches	number	1	1	1	1
	Residences	number	36	42	30	36
	Retail	number	10	26	8	12
	Office	number	2	6	3	3
	Library	number	0	0	0	0
	Hospital	number	0	0	0	0
	Industrial	number	0	1	0	0
	Schools	number	0	0	0	0
School Properties:						
		number	0	1	0	0
		acres	0	1	0	0
Cemeteries:						
		number	0	0	0	0
Section 4(f) Property (Public parks and recreation areas):						
		number	0	0	0	0
Emergency Facilities:						
	Fire/Police	number	0	0	0	0
Hazardous Materials Sites:						
		number	4	11	4	3
		acres	2	5	3	3
Major Utilities:						
		number	11	12	12	12
Wetlands:						
	Forested	acres	10	3	8	20
	Scrub/shrub	acres	0	0	0	0
	Emergent	acres	1	1	1	1
	Total	acres	11	4	9	21
Open Water (ponds, lakes, etc.):						
		acres	2	2	2	3
Streams:						
		crossings	15	12	11	12
		linear feet	7780	5170	4715	9130
Floodplains:						
	Floodways	number	4	5	4	3
	100-year floodplains	number	4	4	4	3
		acres	45	38	54	80
Soils:						
	Prime farmland	acres	209	71	242	301
Archaeological:						
	Archaeological sites	number	6	7	5	5
		acres	2	2	2	1
	High probability areas	acres	113	84	68	125
Historic:						
	Listed/Eligible	number	1	2	1	1
	Potential	number	2	3	3	2
Costs:						
	Construction Cost	\$ million	351	299	345	328
	Right-of-way cost	\$ million	73	101	70	68
	Total Cost	\$ million	424	400	415	396
Carried forward for detailed Study*			No	Yes	Yes	No

**No-Action Alternative* – Although this alternative would not meet the project's purpose and need, it serves as a baseline when comparing the effectiveness and potential impacts of other alternatives and was, therefore, carried forward for detailed study.

Note: The impacts in this table were tabulated using existing secondary source data and conceptual design parameters.

Alternatives E and H were eliminated due to additional environmental impacts when compared to alternatives F and G. Alternative E had the highest number of stream crossings (15) and the second greatest impacts to wetlands (11 acres) and linear feet of streams (7,780 feet) when compared to all of the other preliminary alternatives. In addition, unlike Alternative G, Alternative E would not provide the added benefit of relieving traffic congestion on SR 32 through the Town of Westfield, which includes potential Section 4(f)/106 sites. Alternative H would require the most right-of-way (516 acres) and result in the greatest impacts to agricultural land (327 acres), prime farmland soil (301 acres), linear feet of streams (9,130 feet), floodplain areas (80 acres) and wetlands (21 acres). More specifically, the majority of the wetland, stream, and floodplain impacts are related to a longitudinal encroachment along Cool Creek between SR 431 and 151st Street. This area has been identified by the US Fish and Wildlife Service as a sensitive ecosystem that should be avoided. It also may be potential habitat for the federally endangered Indiana bat.

Transportation Management (TM) Alternative

Following the completion of the Preliminary Alternatives Analysis, a Transportation Management (TM) Alternative was developed as a combination of the Travel Demand Management (TDM), Transportation System Management (TSM), and Mass Transit Alternatives.

The US 31 corridor is characterized by an automobile-oriented transportation system that supports a suburban environment. Currently, there is no transit service in the corridor. Most employers have ample amounts of free parking, therefore, the primary means of travel in the corridor is by automobile. The examination of the AM travel patterns into and out of the corridor reveal a pattern of scattered trip origins and scattered trip destinations. These patterns are not conducive to a reduction in travel due to the Transportation Management Alternative. Additionally, the 1990 Census data demonstrates that, beyond the southern terminus of the study area (I-465), there is a fairly dispersed commuting pattern. As such, only a small proportion of the AM trips out of the US 31 corridor to Marion County are bound for the dense Central Business District (CBD) of Indianapolis.

As a result of these findings, the TM Alternative would not address the purpose and need of this project because it would not significantly reduce congestion or improve safety. Therefore, the TM Alternative was not carried forward for detailed study as a DEIS Alternative.

Preliminary Alternatives Carried Forward for Further Analysis in the DEIS

Based on the findings of the Preliminary Alternatives Analysis, the following Preliminary Alternatives were carried forward for detailed study in the DEIS.

No-Action Alternative

The No-Action Alternative assumes that all of the projects in the current Indianapolis MPO Long Range Transportation Plan would be implemented with the exception of improvements to US 31. This alternative would not meet purpose and need for the project but serves as a baseline when comparing the effectiveness and potential impacts of the other alternatives.

Alternative F*

In addition to meeting the project's purpose and need, Alternative F would require the least amount of right-of-way (308 acres) that correspondingly results in the fewest impacts to agricultural land (101 acres), forestland (58 acres), floodplains (38 acres), and wetlands (4 acres) and the second fewest impacts to linear feet of streams (5,170). These alternatives would have the lowest construction cost and total cost. They would also be consistent with state and regional transportation plans (Table ES.5-2).

Alternative G*

In addition to meeting the project's purpose and need, Alternative G would have the fewest residential (30) and retail (8) displacements. They would also have the least stream impacts (11 crossings/4,715 linear feet). Moreover, alternative G reduces traffic demand along SR32 through the Town of Westfield, which includes a historic district and several other potential historic structures (Table ES.5-2).

Description of the Alternatives Selected for Detailed Study

The two build alternatives, F and G, were further refined and include three interchanges at 146th Street and a choice between an interchange at 126th Street and 131st Street (Figure ES.5-2). The various combinations of these interchanges leads to six different alternatives for F (i.e., F1 – F6) and six different alternatives for G (i.e., G1 – G6). Table ES.5-3 presents each alternative and the interchange combinations.

**Table ES.5-3
Build Alternatives**

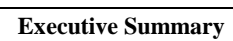
Alternative	Interchange Options				
	126 th St./ Carmel Drive*	131 st St.**	146 th St. Diamond	146 th St. Lateral Access	146 th St. Folded Diamond
F1	X		X		
F2	X			X	
F3	X				X
F4		X	X		
F5		X		X	
F6		X			X
G1	X		X		
G2	X			X	
G3	X				X
G4		X	X		
G5		X		X	
G6		X			X

* Diamond Interchange at 126th Street/Carmel Drive; US 31 passes under 131st Street

** Interchange at 131st Street; US 31 passes over 126th Street

* Documented impacts are based on existing secondary source data and conceptual design parameters. These impacts are refined later in the DEIS.

To view a more detailed version of this map, please [click here](#).



Identification of a Preferred Alternative

Based on the following findings, Alternatives F1 through F6 have been identified as preferred alternatives. Following the DEIS public comment period and the public hearing, a single alternative will be selected and presented in the Final Environmental Impact Statement (FEIS).

Natural Resource Impacts

South of 156th Street, Alternatives F1 through F6 (or F Alternatives) are the same as Alternatives G1 through G6 (or G Alternatives) and, therefore, would result in the same impacts. However, north of 156th Street, the G Alternatives travel off-alignment while the F Alternatives utilized the existing US 31 alignment and right-of-way. As result, the G Alternatives result in greater overall impacts to natural resources such as wetlands, streams, forestland, floodplains/floodways, wildlife, and wildlife habitat than the F Alternatives (Table ES.6-1).

The most notable impacts from the G Alternatives are associated with Cool Creek between 156th Street and Oak Road. At this location, the G Alternatives would result in a longitudinal encroachment (>1 mile) and crossing of Cool Creek that would impact approximately seven acres more of floodways and five acres more of floodplains than the F Alternatives. In addition, the G Alternatives would impact seven more forested wetlands than the F Alternatives with a total of nearly five acres of impacts. The majority of the forested wetland impacts (4.6 acres) occur along the floodplains of Cool Creek within the largest wetland (9.7 acres) in the project area. The value of this wetland is considered high for the following functions: flood storage; wildlife habitat; sediment/toxicant retention; and nutrient removal. Both the US Fish and Wildlife Service (USFWS) and the Indiana Department of Natural Resources (IDNR) have identified the forested floodplain of Cool Creek located east of US 31 and north of 156th Street as an important habitat that should be avoided. The F Alternatives would avoid nearly this entire sensitive habitat.

Because the F Alternatives utilized the existing alignment, the stream impacts are limited primarily to the widening of culverts at existing stream crossings. The G Alternatives, however, would result in seven new stream crossings, including two separate crossings of Cool Creek, involving either bridges or culverts. Overall, the G Alternatives would result in five more stream crossings and approximately 2,000 more linear feet of stream impacts than the F Alternatives.

The G Alternatives would impact 45 to 60 more acres of forestland than the F Alternatives. The IDNR has identified two upland hardwood forest sites that would be impacted by the G Alternatives as providing important wildlife habitat, particularly for migratory songbirds.

With regard to the overall impacts to natural resources, IDNR has stated that the F Alternatives would “disturb the fewest fish and wildlife habitat areas” and, therefore, the impacts would be “minimal and reasonable”.

Agricultural Land/Prime Farmland Soils Impacts

The G Alternatives would impact approximately 175 more acres of active agricultural land and 180 more acres of prime farmland soils than the F Alternatives. The G Alternatives would also bisect a number of agricultural parcels along the east side of the Town of Westfield. Two large parcels are located south of SR 32 and sixteen parcels are located north of SR 32. Four of these bisected parcels would be “land-locked” and require access provisions or land acquisition. The remaining parcels would require the existing landowners to travel longer distances and to traverse

local public roads with their equipment. The F Alternatives use the existing US 31 alignment and, therefore, would not bisect any agricultural land.

Purpose and Need

Although both the F Alternatives and G Alternatives meet the project's purpose and need, the F Alternatives would better satisfy the project's purpose for improving the level of safety along the US 31 corridor because they would result in the upgrading of the entire existing US 31 alignment to freeway design standards, which have lower crash rates. With the G Alternatives, the remaining section of US 31 (approximately 5 miles) would still be an expressway with at-grade signalized intersections, a number of unsignalized intersections, and direct access from several residential and commercial driveways. This section, therefore, would generally have higher crash rates than a freeway system. As a result, the G Alternatives would have less of an overall improvement to safety than the F Alternatives. The No-Action Alternative would not meet the project's purpose and need.

Other Considerations:

Community Opinion:

During the Preliminary Alternatives Analysis and Screening phase of the project, Alternative G was presented as an alternative to be carried forward for detailed study in the DEIS at Public Meeting #2 held on July 30, 2002. Approximately 30 citizens spoke at this meeting and nearly all of these individuals were opposed to Alternative G. Following the meeting, approximately 90 comment forms, emails, and phone calls were received from citizens voicing opposition to Alternative G. Additionally, letters stating opposition to Alternative G were received from the Town Council of Westfield, the Westfield-Washington Chamber of Commerce and the Westfield-Washington School Corporation Board. In addition, a letter signed by representatives of 10 neighborhood associations in Washington Township (comprised of 905 homes) was received, also in opposition to Alternative G. Finally a petition was submitted by the Westfield-Washington Alliance of Neighborhood Associations with more than 400 names favoring Alternative F.

Proposed Development/Compatibility with Local Land Use Plans:

The F and G Alternatives are the same south of 156th Street and, therefore, would have the same impacts to proposed developments through this area. North of 156th Street, the F Alternatives remain on the existing US 31 alignment and, as such, are more compatible with the Town of Westfield and Washington Townships 2020 Comprehensive Plan, which also include their thoroughfare plans. The only impacts to proposed developments from the F Alternatives north of 156th Street are associated with the parking lots and access for Cool Creek Commons, a proposed 23-acre commercial development. This development is in the planning process and has not been platted.

The G Alternatives north of 156th Street would impact nearly all of the proposed Cool Creek Commons commercial development. The G Alternatives would also bisect the proposed Oak Manor Planned Unit Development (PUD), a large mixed-use development with over 300 residential lots, 150 apartments, and a 23-acre commercial center. This development is in the planning process and has not been platted. Because the G Alternatives represent an eastern bypass of the Town of Westfield, they would not be compatible with their comprehensive and

thoroughfare plans. Most of the area along the G Alternatives is currently active agricultural land but is planned for residential development. The G Alternatives may shift the demand for development through this area from residential to commercial.

Overall, the G Alternatives would impact from between 76 to 105 acres more of proposed development than the F Alternatives.

Construction & Maintenance Costs:

The overall costs associated with the G Alternatives would be greater than those with the F Alternatives. Though the right-of-way costs are higher for the F Alternatives, the construction costs of the G Alternatives contribute to make the total cost approximately \$4 million to \$21 million higher than the F Alternatives. In general, the G Alternatives would have greater construction and maintenance costs because they are on a new alignment and approximately one mile longer than the F Alternatives. This added distance along with the remaining US 31 facility also results in more vehicle miles traveled for the G Alternatives and a seven percent increase in the annual operational energy consumed when compared with the F Alternatives.

In addition, approximately five miles of the existing US 31 facility would remain along the west side of the Town of Westfield with the G Alternatives. Maintenance of this remaining facility would be required in addition to the new alignment. According to the INDOT Greenfield District, roadway maintenance of this five-mile section of US 31 would cost approximately \$100,000 per year. This estimate is based on a four-year average (1999 to 2003) of costs incurred on US 31 through this location.

Residential/Commercial Displacements:

Impacts that would be greater for the F Alternatives are the number of residential and commercial displacements. The F Alternatives would result in 16 to 22 more residential displacements and 28 to 30 more commercial displacements when compared with the G Alternatives. Most of the commercial displacements occur at the SR 32 interchange while most of the residential displacements occur at the 161st Street and 191st Street interchanges and at the North Glenn Village mobile home community.

ES.6 Summary of Impacts

Direct impacts typically include those that involve clearly observable, physical alteration of the land or water bodies as a result of construction activities within the proposed right-of-way. Impacts such as these may be permanent or temporary and positive or negative in nature. For example, displacing residences or businesses that are in the path of a proposed road alignment is a permanent impact in much the same way as changing a stream course or draining and filling a wetland is also permanent.

Temporary direct impacts typically occur in the right-of-way during construction activities. They usually result in physical effects but do not cause permanent alteration of the land or water bodies. Temporary easements, for example, may be required for access and storage of equipment on site.

Indirect impacts are those that occur as a result of a project action but are removed from the immediate right-of-way. The Federal Highway Administration (FHWA) defines indirect impacts

as those that are “caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable.” Generally these impacts are induced by the initial action. They comprise a wide variety of indirect impacts such as changes in land use, economic development, and population density. Cumulative effects are impacts that result from the “incremental consequences of an action when added to other past and reasonably future actions...[They are]... less defined than indirect impacts...[and]...may be undetectable when viewed in the individual context of direct and even indirect impacts, but nonetheless can add to other disturbances and eventually lead to measurable environmental change” (FHWA).

The No-Action Alternative, while having no *direct* construction costs or impacts, would result in indirect economic, environmental, and quality of life impacts that can be expected from the continued deterioration of system capacity as identified in the Purpose and Need.

Impacts of the project alternatives are summarized in Table ES.6-1

Traffic and Transportation

As the area’s population and employment, as well as internal and external travel have continued to increase, so has congestion and delay on area roadways. Base year (2000) levels of service at signalized intersections along US 31 are consistently fair to poor. Seven of the fifteen signalized intersections operate at LOS E or F during the AM and/or PM peak hours. LOS D is considered minimally acceptable according to INDOT’s current standards.

Traffic volumes on US 31 are projected to continue to increase in the future. As a result, delay and congestion found in the corridor would worsen if no improvements were made along US 31. By 2025, thirteen of the fifteen signalized intersections are projected to operate at LOS E or F during the AM and/or PM peak hours. Congestion is expected to be particularly severe between 96th Street and 136th Street, where all eight intersections are projected to operate at LOS F during at least a portion of the day.

Both the Alternatives F1 through F6 and Alternatives G1 through G6 would improve traffic flow and congestion within the corridor. Levels of service along the proposed freeway for all of the alternatives are projected to range from LOS A to C, meeting INDOT’s standards for a limited access freeway. The projected levels of service at the intersections of the ramps and cross streets generally range from LOS A to D (with LOS E occurring at the lateral access interchange option at 146th Street, i.e., Alternatives F2, F5, G2, and G5).

Pedestrian/Bike Path

Alternatives F1 through F6 would provide an interchange or an over/underpass at every signalized intersection along US 31 except at 103rd Street and Greyhound Pass. In addition, an overpass or interchange would be provided at 131st Street, which currently does not allow for the cross movement of traffic. Pedestrian and bicycle crossing would be provided at these interchanges via sidewalks, shared-use paths, or other means for future pedestrian capabilities as detailed in the Clay Township and Washington Township comprehensive plans. In addition, because these interchanges are grade separated, the potential conflicts between cross movements and US 31 mainline through traffic would be eliminated.

Table ES.6-1

Category			Units	Alternative											
				No-Action	F1	F2	F3	F4	F5	F6	G1	G2	G3	G4	G5
Landuse:	agricultural	acres	0	102.8	102.8	102.8	102.3	102.3	102.3	276.8	276.8	276.8	276.3	276.3	276.3
	commercial	acres	0	86.2	85.3	84.5	85.9	85.0	84.1	66.0	65.0	64.0	65.0	64.0	64.0
	industrial	acres	0	18.1	18.1	18.1	18.1	18.1	18.1	1.0	1.0	1.0	1.0	1.0	1.0
	institutional	acres	0	21.7	21.7	21.7	21.7	21.7	21.7	20.4	20.4	20.4	20.4	20.4	20.4
	mixed urban	acres	0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	residential	acres	0	26.8	27.3	29.2	26.8	27.3	29.2	45.5	45.9	47.8	45.5	45.9	47.8
	forest land	acres	0	32.4	35.3	39.1	31.8	34.7	38.5	84.6	87.5	91.4	84.0	86.9	90.7
	herbaceous rangeland	acres	0	2.6	2.6	2.6	2.7	2.7	2.7	9.2	9.2	9.2	9.3	9.3	9.3
	shrub/brush rangeland	acres	0	8.9	9.2	9.4	10.3	10.6	10.8	10.9	11.1	11.4	12.3	12.5	12.8
TOTAL		acres	0	299.7	302.4	307.6	299.7	302.4	307.6	514.4	517.0	522.0	513.7	516.3	522.3
Relocations:	single residence	number	0	48	48	50	48	48	50	29	29	31	29	29	31
	multiple residence	number	0	1	1	2	1	1	2	1	1	2	1	1	2
	TOTAL	number	0	49	49	52	49	49	52	30	30	33	30	30	33
	retail	number	0	26	25	25	26	25	25	9	8	8	9	8	8
	office	number	0	12	12	12	12	12	12	4	4	4	4	4	4
	library, hospitals, schools	number	0	0	0	0	0	0	0	0	0	0	0	0	0
	industrial	number	0	5	5	5	5	5	5	1	1	1	1	1	1
	TOTAL	number	0	43	42	42	43	42	42	14	13	13	14	13	13
	Churches	number	0	2	2	2	2	2	2	2	2	2	2	2	2
School Properties:	number	0	1	1	1	1	1	1	0	0	0	0	0	0	0
	acres	0	0.9	0.9	0.9	0.9	0.9	0.9	0	0	0	0	0	0	0
Cemeteries:	number	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Section 4(f) Property	number	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(Public Parks & Recreational Areas):	acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Emergency Facilities:	Fire/Police	number	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous Materials Sites:	number	0	12	12	12	12	12	12	12	6	6	6	6	6	6
Noise Receptors:	number	71	76	76	76	76	76	76	76	55	55	55	55	55	55
Major Utilities:	number	0	14	14	14	14	14	14	14	14	14	14	14	14	14
Wellhead Protection Zones:	number	0	4	4	4	4	4	4	4	1	1	1	1	1	1
Wetlands:	forested (PFO1)	acres	0	0.27	0.57	2.67	0.27	0.57	2.67	5.13	5.43	7.53	5.13	5.43	7.53
	scrub-shrub (PSS1)	acres	0	0.05	0.05	0.05	0.05	0.05	0.05	0.34	0.34	0.34	0.34	0.34	0.34
	emergent (PEMC)	acres	0	0.60	0.60	0.60	0.60	0.60	0.60	1.95	1.95	1.95	1.95	1.95	1.95
	TOTAL	acres	0	0.92	1.22	3.32	0.92	1.22	3.32	7.42	7.72	9.82	7.42	7.72	9.82
Open Water (ponds, lakes, etc.):	acres	0	4	5	5	3	4	4	4	3	3	3	2	2	2
Streams:	crossings	0	11	11	11	11	11	11	11	15	15	15	15	15	15
	linear feet	0	3165	3165	3258	3165	3165	3258	5272	5272	5365	5272	5272	5365	5365
Floodplains:	Floodways	number	0	7	7	7	7	7	7	7	7	7	7	7	7
		acres	0	10.3	10.3	10.3	10.3	10.3	10.3	17.9	17.9	17.9	17.9	17.9	17.9
	100-yr floodplain	number	0	14	14	14	14	14	14	12	12	12	12	12	12
		acres	0	35.0	35.7	35.7	35.0	35.7	35.7	45.5	46.2	46.2	45.5	46.2	46.2
Soils:	prime farmland	acres	0	95	97	98	95	97	98	277	279	280	277	279	280
Archaeological:	archaeological sites	number	0	7	8	8	7	8	8	4	5	5	4	5	5
		acres	0	1.1	1.5	1.5	1.1	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
	high probability	acres	0	42	44	44	42	44	44	76	77	77	76	77	77
Historic:	Section 106*	number	0	2	2	2	2	2	2	1	1	1	1	1	1
Planned Future Development:	acres	0	14	20	32	17	23	23	99	105	117	101	107	119	
Costs:															
Construction Cost	\$ million	0	316	317	310	316	317	310	349	350	343	349	350	343	
Right-Of-Way Cost	\$ million	0	118	116	116	118	116	116	98	96	96	97	95	95	
Total Cost	\$ million	0	434	433	426	434	433	426	447	446	439	446	445	438	

* - Adverse affects to potentially eligible sites

As with any high-speed freeway with interchanges, future bicycle usage of mainline US 31 would be prohibited. This would have a minimal impact on current bicycle traffic on US 31 that is virtually non-existent today. No mainline bicycle travel enhancements would be provided with these alternatives.

Construction of an interchange at 146th Street would impact the shared-use path and sidewalk system along 146th Street. These impacts would be temporary and vary somewhat depending on the interchange alternative selected at 146th Street. Closure may be required during the construction period of the interchange, which could last two years or more. Other temporary impacts related to construction include noise, dust, and construction traffic.

None of the build alternatives would require permanent use or right-of-way from the Monon Greenway or the South Union Trail; therefore, pedestrian and bicycle access along these trails would be maintained. Temporary closure of both trails would be required during construction activities.

A privately owned path is part of the Indiana Mills and Manufacturing, Inc. (IMMI) facility located in the southeastern quadrant of US 31 and 191st Street. This path travels the circumference of the property and appears to be for employee recreation (i.e., connecting two adjoining facilities). It does not appear to be integral to the production operations of the facility. Part of this path would be impacted by the 191st Street interchange.

Social/Economic

Alternatives F1 through F6 would displace 49 to 52 residences, while the Alternatives G1 through G6 would displace 30 to 33 residences. Of these displacements, no low-income or minority communities would be affected nor would any cohesive communities or neighborhoods be bisected.

Alternatives F1 through F6 would displace the greatest number of businesses, between 42 and 43. Alternatives G1 through G6 would displace fewer businesses, between 13 and 14. The displacement of businesses south of 156th Street is the same with both Alternatives F1 through F6 and Alternatives G1 through G6, depending upon interchange option selected.

All the build alternatives would have an impact on current, potential or future land use in the area, particularly near interchanges. The undeveloped areas surrounding proposed interchanges could experience accelerated growth based upon enhanced access. Based upon the plan for Carmel/Clay Township that focuses on creating a commercial corridor along the US 31 alignment this growth is anticipated. In addition, the zoning plan for Westfield/Washington Township consists of expanding growth to the north, east, and west of existing developments. As a result, the growth is expected to occur regardless of whether any of the alternatives are built or not.

Additionally, areas that are not easily accessible via interchanges may experience a much different effect. These areas of limited or indirect access could have lesser potential for development and current land use could be altered as a result. The greatest affect is anticipated to be on businesses that rely on transient clientele (i.e. gas stations and hotels). Destination travel locations should not be significantly affected.

The altered access at Greyhound Pass and 151st Street could impact the Village Park Plaza. The hotels located on 103rd Street could be impacted by lack of direct access. Similarly, if no interchange is provided at 126th Street, the retail center along the east side of US 31 could be impacted. However, an upgraded facility would have the capability to support the projected traffic volume. Businesses along the corridor would have exposure to more traffic. Therefore, there is a potential for an increase in commercial activity along the corridor.

The potential loss of tax revenues for Carmel/Clay Township and Westfield/Washington Township resulting from the project related displacements represent a small percentage of their total tax base. A projected loss of 0.09% for all F and G Alternatives for Carmel/Clay Township would be anticipated. Additionally, a projected loss of 1.1% for Alternatives F1 through F6 and 0.3% to 0.4% for the Alternatives G1 through G6 for Washington/Westfield Township would be anticipated.

According to census data, Additionally, based upon available US Census data and field observations, none of the neighborhoods identified adjacent to the existing US 31 alignment or the proposed off alignment route have been recognized as low-income, subsidized or minority. Executive Order 12898 (February 11, 1994) requires an assessment of minority and low income populations within the study area in compliance with Environmental Justice regulations. Environmental Justice has three fundamental principles: 1) To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations; 1) To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and, 3) To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The study area was assessed for Hispanic, Black, Asian, Native American, Pacific Islander, and Other (e.g., multiracial, interracial, etc.) populations. Minority populations within each block along the US 31 corridor that exceed 1% are indicated. According to the mapping, three census blocks along the US 31 corridor contain minority groups that are greater than 1% of the total population of the block (ranging from 2% to 26% total population).

The first block is bound by US 31 to the west, David Brown Drive/Clubhouse Drive to the north, South Union Street to the east, and 161st Street to the south. The southern portion of the block, which is currently vacant, is the site of the proposed Cool Creek Commons development. The second block is bound by US 31 to the west, 151st Street to the north, Silver Thorne Way to the east, and Greyhound Pass to the south. Village Park Plaza, a commercial development along US 31, comprises the western portion of the block. Tree Top of Carmel Apartments and Townhouses (eastern portion) comprises the only residential part of the block. The third block includes the Park Place subdivision, Bethlehem Lutheran Church, and a proposed business park (northwest of US 31 and 131st Street). The only residential portion of this block is Park Place.

There are no neighborhoods or communities with a high percentage of the population below poverty. Percentage of the population within the study area that is below poverty ranges from 1% to 8%.

Community Facilities and Services

There would be 0.9 acre of impact to the Westfield/Washington Township School property located northeast of SR 32 and US 31 under the Alternatives F1 through F6. This impact would be to the vacant grassy lot adjacent to the football field. In a memo dated May 28, 2002, Mr. Marty McGaughey (Director of Facilities, Westfield Washington Schools) included a map illustrating public use areas within the Westfield Washington School campus. The aforementioned vacant lot, though part of the school property, is currently unused and is not a publicly owned park, recreation area, wildlife or waterfowl refuge and is not eligible for or included in the National Register of Historic Places. It is therefore not a Section 4(f) property.

Some bus routes for both the Westfield/Washington Township Schools and the Carmel/Clay Township Schools would be altered by all potential alternatives due to elimination of access to US 31 from some existing roads that currently access US 31.

All build alternatives would require the relocation of two churches and minor impacts to the entrance of another. All build alternatives would result in direct impacts to two hospital properties (lawn and landscape only). All build alternatives would require relocating public and private, above and underground utility lines.

None of the build alternatives would require permanent use or right-of-way from the Monon Greenway or the South Union Trail; therefore, recreation use of these trails would be maintained. Temporary closure of both trails would be required during construction activities.

Alternatives F1 through F6 would require relocating the proposed entrance to the future MacGregor Park from US 31 to SR 38. The access from SR 38 would be provided to the boundary of the park and would not require any temporary or permanent use or right-of-way from the park property. As a result, there would be no Section 4(f) impacts or evaluation.

None of the build alternatives would require the permanent or temporary use of right-of-way from, or convert the use of, any property identified as a Section 6(f) property pursuant to Section 6(f)(3) of the Land and Water Conservation Fund (LWCF) Act of 1965 (16 USC 460). Hamilton County Parks and Recreation received LWCF funding for the nature center at Cool Creek Park; however, since funding was used for the nature center and not for the purchase of land, Section 6(f) does not apply to Cool Creek. There are no other LWCF funded parks within the study area; therefore, no Section 6(f) resources will be impacted.

None of the alternatives would result in direct impacts to cemeteries or libraries

None of the alternatives would result in direct impacts to any fire stations, police stations or Emergency Medical Service (EMS) facilities. All build alternatives would have the potential to have both positive and negative impacts on emergency response times.

Farmland

The Alternatives F1 through F6 would impact 95 acres to 98 acres of prime farmland, while the Alternatives G1 through G6 would impact 277 acres and 280 acres of prime farmland. The Alternatives G1 through G6, north of 156th Street, follow an off-alignment route which

transverses east of Westfield and rejoins the existing alignment at SR 38. This proposed off-alignment segment of the Alternatives G1 through G6 has the greatest impacts to prime farmland, 172 and 185 acres.

Alternatives F1 through F6 use the existing alignment and, therefore, do not bisect parcels. Alternatives G1 through G6 bisect agricultural parcels along the east side of Westfield. The agricultural parcels bisected by the Alternatives G1 through G6 south of SR 32 would retain access from the surrounding rural roads (Carey Road, Oak Road, 171st Street, and 169th Street). These parcels are all part of the Oak Manor PUD and are slated for development. The agricultural parcels north of SR 32 are zoned for residential development; however, there have been no plans submitted for development of these areas. The Alternatives G1 through G6 would bisect 16 agricultural parcels north of SR 32. Of these, four bisected parcel sections would be “land-locked” and would require access provisions. The remaining 12 would result in extended routing by the farmer, across the alignment, to gain access to the separated parcels. There are two large parcels south of SR 32 that would be bisected by Alternatives G1 through G6.

As is required by the Farmland Protection Policy Act, Form AD-1006 has been completed. Because this project received a total point value of less than 160 points, coordination with the NRCS is not necessary and the build alternatives would receive no further consideration for farmland protection. No other alternatives other than those already discussed in this document would be considered without re-evaluation of potential impacts upon farmland.

Historic and Archaeological Resources

According to the Indiana State Historic Preservation Officer (SHPO), there are two potentially eligible properties and one potentially eligible district within the Area of Potential Effects (APE) of the project. All other previously identified properties within the APE are not eligible for inclusion in the National Register of Historic Places (NRHP).

Alternatives F1 through F6 would impact the Hunt House and the Lindley Farm. The Determination of Effects for these properties are as follows:

Hunt House

National Register Eligibility: Yes **Criteria:** C, Architecture

Alternatives F1 through F6

- *Direct Effect:* There would be no permanent or temporary use of the historic boundary, which includes the house and its immediate surroundings. The boundary for the historic property is as determined in consultation with the SHPO.
- *Visual Effect:* The Alternatives F1 through F6 would change the access to the historic property by requiring a new drive from 191st Street that is located to the north. The property's current access is from US 31 to the east. The present right-of-way is approximately one hundred feet from the property. A new access road as well as a retaining wall between the property and the highway would be required. Compensation for the access would be provided by INDOT. In addition, there is a possibility of elevation of the highway within the viewshed of the property. All of these indicate that there would be an adverse visual effect greater than the visual effect of the present highway. Sight lines to the west should not be affected. ***Adverse Effect.***

- *Auditory Effect:* While there is an increase in the projected noise level (69.9 dBA for No-Action and 70.8 dBA for the F Alternatives), it is less than 1 dBA. However, the existing level (68.3 dBA) already exceeds the acceptable (66 or 67dBA) level for residences. ***Adverse Effect.***

Alternatives G1 through G6

Because the Alternatives G1 through G6 would not result in any roadway improvements along the existing US 31 where the Hunt House is located, there would be **no effect** to the existing historic boundary of the property.

Lindley Farm

National Register Eligibility: Yes **Criteria:** C, Architecture and A, Agriculture

- *Direct Effect:* With the historic boundary as presently drawn in consultation with the SHPO, there would be no permanent or temporary use of the historic boundary for either the F or G Alternative.
- *Visual Effect:* Alternatives F1 through F6 would add a retaining wall and an access road. The retaining wall would be constructed parallel to US 31, bordering the western historic boundary of the property. The existing access for Lindley Farm to US 31 would be eliminated with Alternatives F1 through F6. New access to the parcel would be provided from SR 38. The access to Lindley Farm would cross multiple properties; therefore, the initial portion of the access would be a new Hamilton County road, ending with a cul-de-sac, providing access to the parent parcel. Compensation for the access would be provided by INDOT. The change in access would change the setting, views to and from the property, and orientation. ***Adverse Effect.*** Alternatives G1 through G6 would not change access and thus would not change the entry; however the proposed alignment would be visible from the house, thus changing the setting. ***Adverse Effect.***
- *Auditory Effect:* Alternatives F1 through F6 (69.9 dBA) would increase the existing noise level (64.1 dBA) above the acceptable level for such properties. ***Adverse Effect.*** Alternatives G1 through G6 (60.9 dBA) would have a noise level less than the existing US 31. ***No Adverse Effect.*** The No-Action Alternative would increase the noise level to 65.6 dBA which is below the acceptable level for such properties. ***No Adverse Effect.***

Westfield Historic District

National Register Eligibility: Yes **Criteria:** C, Architecture and A, Commerce

- *Direct Effect:* Neither Alternatives F1 through F6 nor Alternatives G1 through G6 require the use of this historic district.
- *Visual Effect:* The construction limit of Alternatives F1 through F6 is approximately 700' from the edge of the district, along SR 32. However, the existing highway is not visible from the district at present. Distances to the right-of-way of Alternatives G1

through G6 are such that there is no visibility. As a result there would be **no effect** to the Westfield Historic District.

- *Auditory Effect:* Based on the location of this district in relation to the mainline of all potential build alternatives, Alternatives F1 through F6 and Alternatives G1 through G6 would have **no effect** on the Westfield Historic District.

There are between 42 and 44 acres of land that have a high probability of containing archaeological resources within the Alternatives F1 through F6, and between 76 and 77 acres within the Alternatives G1 through G6. Additionally, there is the potential to impact seven to eight known archaeological sites by the Alternatives F1 through F6 and four to five by the Alternatives G1 through G6.

Air

Because the entire project is within Hamilton County, no portion of this project is within a designated nonattainment area for any of the air pollutants for which the U.S. EPA has established standards. A carbon monoxide (CO) "hot spot" analysis calculated the CO concentrations for the years 2000 (existing), 2010 (first year of operation), and 2025 (design year). The results of the microscale CO analysis indicate that this project would result in no violations of either the one-hour (35.0 ppm) or eight-hour (9.0 ppm) National Ambient Air Quality Standards (NAAQS) for CO.

Noise

Noise levels in close proximity to each build alternative would be increased. Projected noise levels (2025) approach or exceed the standards as identified in the FHWA Noise Assessment Guidelines and INDOT Guidelines at 76 receptors under Alternatives F1 through F6, 55 receptors under Alternatives G1 through G6, and 71 receptors under the No-Action Alternative. It is expected that noise levels would be increased on the short-term during the construction of any build alternative.

Natural Resources

Impacts resulting in fragmentation or destruction of habitat, which in turn impacts the plant and animal communities, are most prominent throughout Alternatives G1 through G6 north of 156th Street. Impacts to individual habitat types can be measured; however, resulting impacts to plant and animal communities within each particular habitat type can only be speculated.

There are more than twice the amount of impacts to forestland and herbaceous rangeland associated with Alternatives G1 through G6 than Alternatives F1 through F6. There are between 32.4 and 39.1 acres of forestland impacted by Alternatives F1 through F6, and between 84.0 and 91.4 acres impacted by Alternatives G1 through G6. There are approximately three acres of herbaceous rangeland impacted by Alternatives F1 through F6, and approximately nine acres impacted by Alternatives G1 through G6.

Impacts to shrub/brush rangeland are similar for both Alternatives F1 through F6 and Alternatives G1 through G6. There are between 8.9 and 10.9 acres of shrub/brush rangeland impacted by Alternatives F1 through F6, and between 11.1 and 12.8 acres impacted by Alternatives G1 through G6.

Two federally listed species, the Indiana bat and the bald eagle, are reported to have ranges which include Hamilton County; however, there have been no reported occurrences of either species within the project corridor. An Indiana bat survey was conducted within the Cool Creek watershed; the survey reported no instances of the Indiana bat within the areas sampled.

According to the Indiana Department of Natural Resources (IDNR), Division of Nature Preserves (DNP), there are two State listed species which have been reported within the project area, the American badger and the red-shouldered hawk. Neither of these species has been reported in the area for over 13 years. It is unlikely that the US 31 Improvement Project would adversely impact either species. No critical habitat for any threatened or endangered species, including the Indiana bat, has been identified within the project.

Water Resources

Both short and long term water quality impacts would result from any chosen build alternative. Construction impacts would result in increased levels of sedimentation and turbidity within surface water. Long-term impacts would be a result of stream alteration that directly relates to aquatic habitat loss (Table ES.6-1). The Alternatives F1 through F6 would have 11 stream crossings and would impact 3,165 to 3,258 linear feet of stream while the Alternatives G1 through G6 would have 15 stream crossings and would potentially impact 5,272 to 5,365 linear feet of stream. Most of the stream impacts would be associated with existing US 31 culverts.

The Alternatives F1 through F6 would potentially impact between 3.0 and 5.0 acres of open water where the Alternatives G1 through G6 would potentially impact between 2.0 and 3.0 acres. All impacted bodies of water are man made.

Floodplains/Floodways

The Alternatives F1 through F6 would potentially impact 10.3 acres of floodway and 35.0 to 35.7 acres of 100-year floodplain while the Alternatives G1 through G6 would potentially impact 17.9 acres of floodway and 45.5 to 46.2 acres of 100-year floodplain (Table ES.6-1).

Wetlands

The Alternatives F1 through F6 would potentially impact 0.92 to 3.32 acres of wetlands while the Alternatives G1 through G6 would potentially impact 7.42 and 9.82 acres of wetlands. Additionally, the Alternatives F1 through F6 would have fewer impacts to forested, scrub-shrub and emergent wetland systems than the Alternatives G1 through G6. The Alternatives F1 through F6 would impact between 0.27 to 2.67 acres of forested wetland where the Alternatives G1 through G6 would impact 5.13 to 7.53 acres. The Alternatives F1 through F6 would impact 0.05 acres of scrub-shrub wetland systems where Alternatives G1 through G6 would potentially impact 0.34 acre. The Alternatives F1 through F6 would potentially impact 0.60 acre of emergent where Alternatives G1 through G6 would potentially impact 1.95 acres. Refer to Table ES.6-1.

Visual and Aesthetic Resources

While all build alternatives would impact the existing landscaping throughout much of the corridor, the Alternatives F1 through F6 are located within an existing roadway corridor. Therefore, the Alternatives F1 through F6 would not create the same impacts to the visual quality typically associated with construction of a new transportation facility through a developed area. The visual impact to undeveloped properties would be the greatest for the Alternatives G1

through G6, which requires the construction of a off-alignment roadway north of 156th Street and ending at SR 38 back on the existing alignment of US 31.

Hazardous Material Sites

The Alternatives F1 through F6 would impact 12 hazardous material sites while the Alternatives G1 through G6 would impact six sites (Table ES.6-1). The F and Alternatives G1 through G6 impact the same sites south of 161st Street. The sites impacted only by the Alternatives F1 through F6 are located in the vicinity of SR 32. Eleven of the hazardous material sites impacted for all alternatives are registered Underground Storage Tank (UST) facilities. Additionally, six of the UST facilities are reported Leaking Underground Storage Tanks (LUSTs) and three are small quantity generators (SQGs) of hazardous waste.

Energy

Alternatives F1 through F6 and Alternatives G1 through G6 are estimated to increase direct energy consumed compared to the No-Action Alternative. This magnitude of increase, however, is limited to the project corridor as evidenced by the 39% increase in build alternative Average Daily Traffic (ADT) over the No-Action Alternative ADT.

In addition, construction of either build alternative would reduce traffic congestion and turning conflicts along U.S. 31 and, thereby, would reduce vehicular stopping and slowing conditions. The energy conservation that would result from these changed conditions is not fully reflected in this analysis because the frequency of stopping and slowing is not normally quantified.

Overall, the Alternatives G1 through G6 are estimated to increase energy consumed by about seven percent over the Alternatives F1 through F6. The Alternatives G1 through G6 are a mile longer than the Alternatives F1 through F6, and vehicles would expend more energy traveling the additional mile.

Energy consumption by vehicles in the area may increase during construction due to possible traffic delays.

Construction Impacts

Control of erosion from the construction site and retention of sediments on site are the two principal concerns of construction impacts as they relate to drainage. These impacts can be minimized through erosion and sediment control measures, otherwise known as Best Management Practices (BMPs). Using prescribed measures, erosion and sedimentation can be significantly reduced at or near the construction site. Exposure to cleared areas and erodible earth would be avoided whenever possible and feasible. These erosion and sediment control measures would become permanent feature in roadway design.

Solid waste generation resulting from construction activities should be short-term and confined to the vicinity of the project area. Solid waste generated by clearing and grubbing, demolition or other construction practices should be removed from the location and properly disposed.

Burning of construction related debris would be conducted in accordance with all local, state and federal regulations. All burning would be conducted at a reasonable distance from all homes and care would be taken to alleviate any potential atmospheric conditions that may be a hazard to the public. All burning would be monitored.

Dust can be generated in association with excavation and earth moving; cement, asphalt and aggregate handling; heavy equipment operation over haul roads; and wind erosion of exposed areas and materials storage piles. Local weather conditions and level of operation play a significant role in the amount of dust generated. Appropriate dust control would be employed during construction for the protection of motorists and area residents.

An increase in project area noise levels would occur during the construction. Land uses that would be sensitive to vehicular noise would also be sensitive to construction noise. The actual level of noise impact during this period, however, would be a function of the number and type of equipment used, as well as the type of construction activities. This may include heavy equipment movement and grading.

Costs

The overall costs associated with the G Alternatives would be greater than those with the F Alternatives (Table ES.6-1). Though the right-of-way costs are higher for the F Alternatives, the construction costs of the G Alternatives contribute to make the total cost approximately \$4 million to \$21 million higher than the F Alternatives.

In addition, approximately six miles of the existing US 31 facility would remain along the west side of Westfield with the G Alternatives. Maintenance of this remaining facility would be required in addition to the new alignment. According to INDOT, roadway maintenance, including snow and ice removal, of the six-mile facility would cost approximately \$100,000 per year. This estimate is based on a four-year average (1999 to 2003) of costs incurred by US 31 through this location.

ES.7 Indirect and Cumulative Impact Analysis

Indirect and cumulative impacts to natural resources (forests, wetlands, streams, and farmland) were analyzed per resource based on available documentation of impacts (Table ES.7-1). The timeframe associated with each resource analyzed is also dependent on documentation.

The City of Carmel/Clay Township and the Town of Westfield/Washington Township have experienced significant growth in recent years. Planning documents from both these communities indicate continued growth through at least the year 2020. Recent, proposed, and potential development accounts for the majority of vacant parcels within the project area. Only the northwestern-most portion of the proposed alternatives is vacant with no indication of development. Cumulative Impacts are exponentially greater than Direct Impacts, which are proportionately greater than Indirect Impacts (Table ES.7-1). Cumulative Impacts to wetlands are similar for both alternatives. Cumulative Impacts to forests are slightly greater for the Alternatives F1 through F6. Prime farmland Cumulative Impacts are greater for the Alternatives G1 through G6. Impacts to streams (cumulative, indirect, and direct) are greater for the Alternatives G1 through G6 as well.

**Table ES.7-1
Indirect and Cumulative Impacts by Resource**

Resource/Alternatives		Cumulative Impacts				Indirect Impacts ⁴ Total	Direct Impacts ⁵ Total
		Recent ¹	Proposed ²	Potential ³	Total		
Forest*	F1 through F6	0	55	392	447	1	32 - 39
	G1 through G6	0	42	390	432	1	84 - 91
Wetland*	F1 through F6	2	5	18	25	0	2 - 4
	G1 through G6	2	5	18	25	0	8 - 10
Prime Farmland*	F1 through F6	7	25	693	725	20	95 - 98
	G1 through G6	34	39	857	930	20	277 - 280
Streams [†]	F1 through F6	665	878	26,470	28,013	284	3,165 - 3,258
	G1 through G6	665	1,115	27,871	29,651	395	5,272 - 5,365

Sources: Hamilton County Plan Commission, Hamilton County Alliance

* Measured in acres

† Measured in linear feet

¹ Development that has been recently completed or is currently under construction

² Areas of proposed development with existing site plans

³ Undeveloped land (agricultural or natural) that is zoned for development, but for which no proposed plans exist.

⁴ Undeveloped land zoned agricultural where future development, inspired by the project, is likely

⁵ Acreage immediately impacted by construction of US 31 improvements

ES.8 Mitigation Summary

Social/Economic

Mitigation measures of displaced housing include relocating residents into available and comparable housing within their township or school district, depending on availability of housing in each location. Relocation assistance and benefits would be made available to all individuals displaced by the proposed US 31 Improvement Project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1964: United States Code Title 42, Articles 4601 through 4655 (42 USC 4601-4655), Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs: Code of Federal Regulations, Title 49, Subtitle A, Part 24 (49 CFR Part 24), Title VI of the Civil Rights Act of 1964, and Indiana State Relocation Assistance: Indiana Code Title 8 Article 23 Chapter 17 (IC 8-23-17).

Adequate replacement housing exists for all proposed displacements except for those in the under \$50,000 range. These represent the displaced mobile home units displaced by the Alternatives F1 through F6 located in North Glen Village. However, residential displacements within North Glen Village, located northwest of the intersection of US 31 and SR 32, may be mitigated on site. There are 14 mobile homes that would be potentially displaced by the project. There are eight vacant lots for rent and 16 mobile homes for sale within the North Glen Village community, and 1 lot for rent and 1 mobile home for sale in the Eagletown Mobile Park, located in Eagletown, Indiana, approximately three miles west of Westfield on SR 32. This data was obtained during field observations conducted in the spring of 2003, and may be subject to change.

Historic and Archaeological Resources

According to federal regulations, adverse effects to historic properties require the Section 106 consulting parties to “develop and evaluate alternatives or modifications that could avoid,

minimize or mitigate adverse effects” (36 CFR 800.6). Mitigation of an adverse effect of an undertaking may mean avoiding impact altogether, minimizing impact, rectifying impact, reducing or eliminating impact over time, or compensating for impact.

Following the determination of a single preferred alternative, a Section 106 Memorandum of Agreement (MOA) will be drafted to resolve any adversely affected historic resources. The FEIS will include a copy of the signed MOA.

Wetlands

Wetland mitigation is based on requirements set forth in Section 404 of the Clean Water Act (33 USC 1344). In 1990, IDNR, USFWS, and INDOT signed a Memorandum of Understanding (MOU), which established standard mitigation ratios for impacts to wetland resources. While not signatory to the agreement, the Corps and IDEM typically follow the MOU. The agreed mitigation ratios of 2:1 for emergent systems, 3:1 for scrub-shrub systems, and 4:1 for forested systems (Table S.8-1) are still used as guidance for regulatory determination of permit applicant’s request for wetland mitigation. The Corps and IDEM may require more or less impact acreage depending on the quality, location, size, function, and value of the wetland. Compensatory mitigation for disturbances to natural resources is the final alternative that should be considered when a project is planned. The sequence to follow during project planning is 1) avoidance of disturbance; 2) minimization of disturbance; and 3) where these two alternatives do not dispose of the issue, compensatory mitigation for the loss of natural resources.

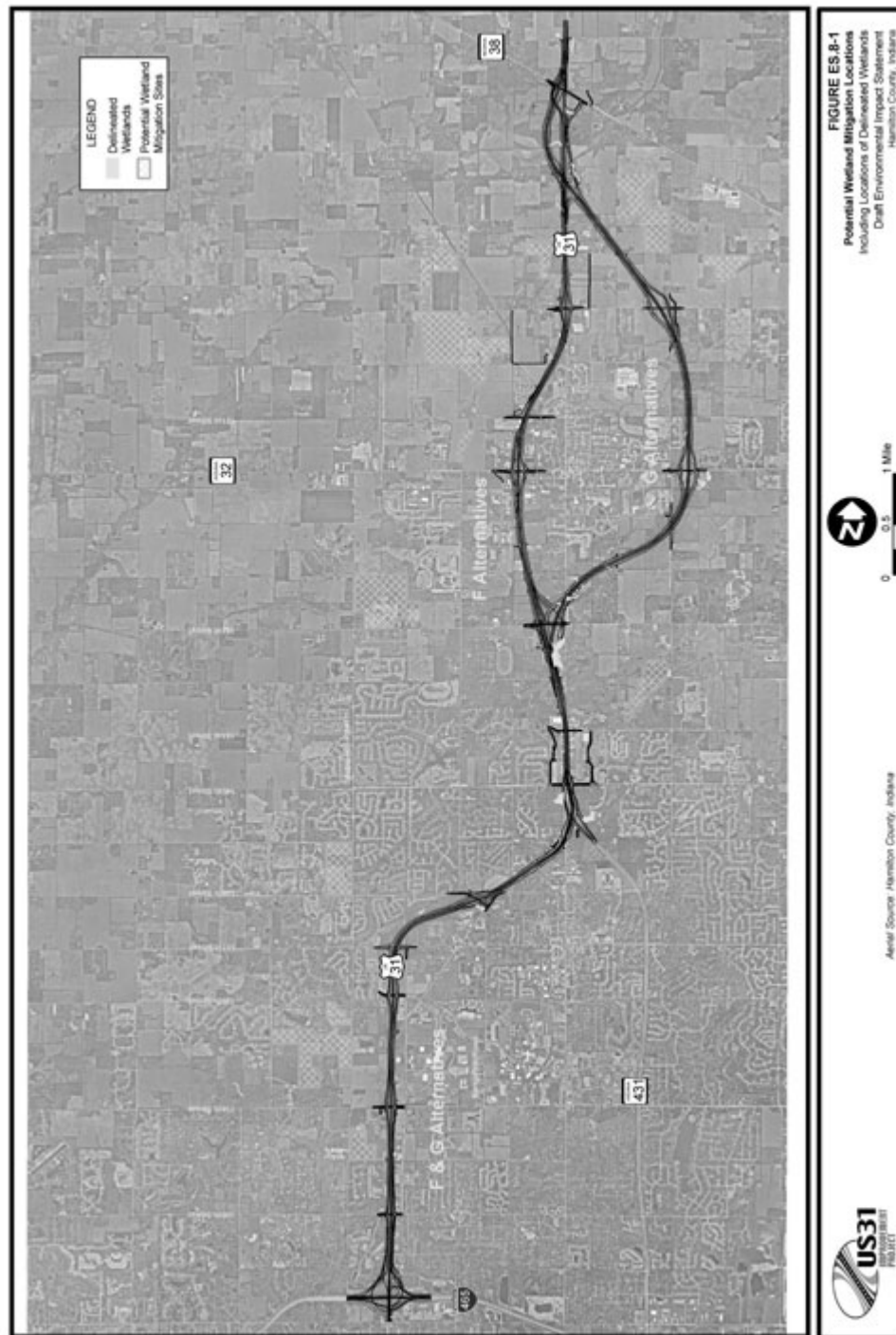
Compensatory wetland mitigation for transportation projects traditionally requires restoration of wetland conditions at an off-site location that is currently not identified as a wetland by Corps standards. This is generally followed by 3 to 5 years of monitoring to ensure the wetland’s proper development. Several locations exhibiting characteristics for potential wetland mitigation sites have been identified in close proximity to the project area (Figure ES.8-1). Potential available acreage for mitigation is greater than 1,200.

**Table ES.8-1
Wetland Mitigation Acreage**

Alternatives	Wetland Type	Acres of Impact	Mitigation Ratio	Mitigation Acreage
No-Action	Emergent	0	2:1	0
	Scrub-shrub	0	3:1	0
	Forested	0	4:1	0
			Total	0
F1 – F6	Emergent	0.60	2:1	1.20
	Scrub-shrub	0.05	3:1	0.15
	Forested	0.27 – 2.67	4:1	1.08 – 10.68
			Total	2.43 – 12.03
G1 – G6	Emergent	1.95	2:1	3.9
	Scrub-shrub	0.34	3:1	1.02
	Forested	5.13 – 7.53	4:1	20.52 – 30.12
			Total	25.44 – 35.04

Figure ES.8-1 Wetland Mitigation

To view a more detailed version of this map, please [click here](#).



Air Quality

No violations of the NAAQS are projected for this project. Therefore, no air quality mitigation measures are required for the roadway improvements.

Noise

INDOT's *Highway Traffic Noise Policy* was used to evaluate the feasibility and reasonableness of noise barriers at all locations in the project area where noise impacts were identified under Build Alternatives. Based on these reasonableness factors, no noise barriers are recommended for this project. **Noise mitigation will be re-evaluated in final design.**

Additional noise abatement measures were evaluated and found to be either unwarranted or infeasible for the Build Alternatives. Other noise abatement measures considered to be infeasible include altering the vertical or horizontal alignment, eliminating truck traffic, and reducing the speed limit.

Visual Impacts and Aesthetics

The US 31 project would incorporate cost-effective design features that could aid in the mitigation of adverse aesthetic impacts to the extent practicable. Specific mitigation measures and aesthetic design features should be refined during the design phase, and coordinated with the local communities.

ES.9 Areas of Concern

As a result of public involvement efforts, the following controversial issues arose regarding the US 31 improvement project:

- The public officials and the vast majority of citizens that have submitted comments from the Town of Westfield have expressed a strong opposition to the G Alternative, which was added during the preliminary alternatives phase. They view this alternative as being incompatible with their projected land use plan, which emphasizes a desired area of growth at US 31 and SR 32 as well as other existing built-up junctions along the existing US 31 corridor. Other concerns raised regarding the G Alternative include a potential decrease in property value, an increase in noise and bisecting a Planned Unit Development (PUD).
- The City of Carmel has expressed an interest in the construction of a partially depressed freeway between 106th Street and 131st Street in an effort to enhance aesthetic and visual qualities.
- The City of Carmel requested that further evaluation of an interchange at 131st Street be considered versus an interchange at 126th Street.
- Commercial districts north of 146th Street have expressed a concern regarding the removal of access to US 31 at Greyhound Pass and 151st Street.

ES.10 Federal Actions and Permits Required

The following Federal permits relating to terrestrial and aquatic resources may be required for the proposed project.

Agency	Permit
United States Army Corps of Engineers (USACE)	Section 404 Permit for the Discharge of Dredged or Fill Material into waters of the United States (e.g.; streams and wetlands)
USACE	Section 10, Construction, Dumping And Dredging Permit

The following permits from the State of Indiana relating to terrestrial and aquatic resources may be required for the proposed project.

Agency	Permit
IDEM	Section 401 Water Quality Certification
IDEM	National Pollutant Discharge Elimination System (NPDES)
IDNR	Construction in a Floodway

The following agencies regulate a “permit by rule.” Though no actual permit is issued, correspondence is required with these agencies prior to construction activities.

Agency	Permit By Rule
IDEM (SWCD)	Storm Water runoff Associated with Construction Activity (Rule 5)
Hamilton County Drainage Board	Legal Drains (Hamilton County Code 36-9-27-17)
Westfield Utilities Department	Wellhead Protection Zone

ES.11 Section 4(f) Resources

This project involves no permanent or temporary use of any Section 4(f) resources.

The US Department of Transportation Act of 1966 (USC 138 and USC 303), Section 4(f), states that the Secretary of Transportation may not approve the use of land from a publicly owned park, recreation area, or wildlife and waterfowl refuge, or any historic sites unless a determination is made that: 1) There is no feasible and prudent alternative to the use of land from the property;

and, 2) The action includes all possible planning to minimize harm to the property resulting from such use.

Section 4(f) resources were reviewed pursuant to 23 CFR 771.135 (a), Section 4(f) of the US Department of Transportation Act of 1966 (49 USC 303) and Section 138 of the Federal-Aid Highway Act of 1968.

Description of Section 4(f) Resources

Schools

Section 4(f) properties associated with schools are limited to the Westfield Washington School campus located northeast of the intersection of US 31 and SR 32. According to Mr. Marty McGaughey (Director of Facilities, Westfield Washington Schools), public use areas within the campus include the football field and track, three baseball fields, three playgrounds, soccer fields, and tennis courts. Alternatives F1 through F6 would impact approximately 0.9 acres of a vacant grass lot adjacent to the football field at the Westfield High School. In a memo dated May 28, 2002, Mr. McGaughey included a map illustrating public use areas within the Westfield Washington School campus. The aforementioned vacant parcel, though part of the school property, is currently unused and, while publicly owned, is not available to the public for park or recreational use; therefore, it does not fall within the Section 4(f) criteria. A retaining wall is proposed along the east side northbound ramp from SR 32 onto US 31, avoiding the football field/track. No Section 4(f) Evaluation is required for public use recreational areas associated with schools as there would be no permanent or temporary use of the school properties that currently are classified as a Section 4(f) property.

Public Parks and Recreation Areas

None of the proposed build alternatives would require the permanent or temporary use of right-of-way from any public park, recreation area, wildlife or waterfowl refuge or sites eligible for or included in the National Register of Historic Places. Alternatives F1 through F6, however, would require relocating the proposed entrance to the future MacGregor Park from US 31 to SR 38. The access from SR 38 would be provided to the boundary of the park and would not require any temporary or permanent use or right-of-way from the park property. As a result, there would be no Section 4(f) impacts or evaluation.

Trails

- **Monon Greenway**

The portion of the Monon Greenway that falls within the existing US 31 right-of-way is owned by the State of Indiana. At this location, all of the build alternatives would include the replacement of the existing twin bridges with a structure, which would allow for the continued use and operation of the Monon Greenway. All construction activity would be restricted to within the existing US 31 right-of-way; therefore, none of the build alternatives would result in the permanent or temporary use of the Monon Greenway. As such, no Section 4(f) Evaluation is required for the Monon Greenway. During construction, INDOT would make every attempt to keep the Monon Greenway open; however, for safety purposes, intermittent and short-term closure of the trail may be necessary.

- **South Union Trail**

For the build alternatives, there would be a temporary use of the South Union Street Trail during construction of the 161st Street interchange. A temporary closure would be necessary to conduct grading and paving operations on 161st Street. Alternatives G1 through G6 would also bridge the South Union Trail along Westfield Boulevard, resulting in temporary use and closure during construction. When complete, modifications to 161st Street would not affect the usability of the trail. No permanent use of right-of-way will be required from the South Union Trail as a result of the build alternatives.

Section 4(f) does not apply to a temporary occupancy where there is documentation that the officials having jurisdiction over the protected resource agree that the temporary occupancy will: 1) be of short duration and less than the time needed for construction of the project; 2) not change the ownership or result in the retention of long-term or indefinite interests in the land for transportation purposes; 3) not result in any temporary or permanent adverse change to the activities, features, or attributes which are important to the purposes or functions that qualify the resource for protection under Section 4(f); and, 4) include only a minor amount of land.

Mr. Kevin Buchheit (Director, Community Development Department, Town of Westfield) was contacted as the jurisdictional official of the South Union Trail. In a letter dated April 30, 2003, the Town of Westfield provided its concurrence with the criteria in respect to Alternatives F1 through F6 and G1 through G6; therefore, no Section 4(f) Evaluation is required for the South Union Trail.

Eligible Historic Properties

There are three historic Section 4(f) resources that are on or eligible for the National Register for Historic Places (NRHP) within the APE of the project. There would be no permanent or temporary use of any historic Section 4(f) resource. Descriptions of Section 4(f) issues concerning each resource are as follows:

- **Hunt House**

The boundary of the historic property includes the house and its immediate surroundings. The property's current access is from US 31 to the east. Alternatives F1 through F6 would incur the loss of this access. Access would be provided to the property from the north, off of 191st Street. Compensation for access would be provided by INDOT. A retaining wall is proposed along the west side of the southbound ramp from 191st Street to US 31, avoiding impacts to the historic property. Alternatives G1 through G6 would not result in any roadway improvements along the existing US 31 where the Hunt House is located. There would be no permanent or temporary use of the historic property associated with the Hunt House; therefore, no Section 4(f) Evaluation is required.

- **T.J. Lindley Farm**

The boundary of the historic property includes the farmstead and its immediate surroundings. The existing access for Lindley Farm to US 31 would be eliminated with Alternatives F1 through F6. New access to the parcel would be provided from SR 38 (Appendix A, Sheets 12 and 13). Compensation for access would be provided by INDOT. A retaining wall is proposed along the west side of the southbound ramp from SR 38 to US 31, avoiding impacts to the historic

property. Alternatives F1 through F6 would require no permanent or temporary use of the historic property associated with the Lindley Farm; therefore, no Section 4(f) Evaluation is required.

Alternatives G1 through G6 would not change access. The proposed alignment would bypass the west side of the farm. The boundary of the historic property would be avoided. Alternatives G1 through G6 would require no permanent or temporary use of the historic property associated with the Lindley Farm; therefore, no Section 4(f) Evaluation is required.

- **Proposed Westfield Historic District**

The boundary of the proposed Westfield Historic District includes the buildings in the immediate vicinity of Union Street and SR 32. There is no effect on the district from any of the build (US 31) alternatives. Alternatives F1 through F6 and G1 through G6 would require no permanent or temporary use of the historic property associated with the proposed Westfield Historic District; therefore, no Section 4(f) Evaluation is required.